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A-ONE #1510 03/08/13

~ Czech News Cyberattack ~ People Are Talking! ~ The Next New Xbox!

~ Google \$7 Million Fine ~ SimCity Launch Botched ~ Microsoft Is Stupid?

[~] Win 8 Laptops Cheaper! ~ 3D-Printed Skull Ready ~ Used Digital Goods!

-* Hackers Fail To Crack Chrome *-* Microsoft Is Browser Non-compliant! *-* Samsung Cancels US Windows RT Tablet Plans *-

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->From the Editor's Keyboard

"Saying it like it is!"

Another week, another major storm here in the Northeast! All week long, the weather prognosticators were predicting a fairly large storm to hit the northeastern part of the country. Here in Massachusetts, they were predicting some snow, and turning over to rain. As of Thursday night, we were supposed to get 3-6 inches of snowm focusing in on the lower end of the range. By 2:00 Friday afternoon, we had about a foot of snow on the ground before the storm shut down! Some areas got over two feet of snow! They really blew this forecast!

So, after spending some "quality" time cleaning up after this storm, I'm ready to get right to this week's issue! Hopefully you all managed to "survive" another winter blast!

Until next time...

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->In This Week's Gaming Section - EA Botches SimCity Launch, Amazon Stops Sales!

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->A-ONE's Game Console Industry News - The Latest Gaming News!

The Next Xbox

Over 76 million Xbox 360 gaming consoles have been sold since it debuted back in 2005. While the system underwent a redesign in 2011, in the gaming world, that s eons ago. So this year, everyone expects a new Xbox, and the

rumors are flying as to what new features might be added and when it might be unveiled.

We know the new device is code-named Durango, but will the official release name be Xbox 720? Or, as others have noted, Microsoft recently snapped up domain names for Xbox8, with the 8 doubling as a symbol implying the name Xbox Infinity.

Faster Graphics, 3D, a DVR, Blu-Ray, and a Supercharged Kinect Rumors Whatever the name, the new Xbox is said to run on chipsets six to eight times more powerful than today s device. As always, Microsoft wants to convert PC Gamers to Xbox enthusiasts.

All new Xbox consoles will have a 500 GB hard drive minimum, mostly for entertainment, but all games will have to be installed. According to gaming site Kotaku, the console will have an 8-core, 64-bit CPU running at 1.6ghz, and 800mhz DirectX 11.x graphics processor units.

The new Xbox is rumored to be capable of 3D, if you have a 3D TV. And we re almost certain it 1l be heavy on entertainment options, such as the ability to play Blu-ray discs and game play running simultaneous with entertainment apps. Also Microsoft filed a patent to include a built-in DVR in the device so you could record shows from live TV and watch off your Xbox. There s also a strong possibility you 1l get added controls and accessibility to the Xbox if you have a Windows 8 Phone.

One big brother aspect of all these entertainment additions is implied in a patent Microsoft won in 2011 called Content Distribution Regulation by Viewing User. The idea is that a home user might stream a movie and Microsoft could use the Kinect Motion sensor to determine how many people are watching. They d then charge you a per seat fee: 2 people = \$20, 3 people \$30. Really, Microsoft s looking into my living room to see who s watching? Not sure that s going to fly, but remember: these are all just rumors and speculation.

One big prediction is that all Xbox consoles will come standard with a Kinect motion sensor. It may add a bit to the price, but if this is true, you can extrapolate that Microsoft might also force voice calibration to get you to use the voice control features in Kinect. Also, they might need to bring the manufacturing price down on the Kinect if it is to come included with the console, and some think Microsoft will get that price reduction by taking out the hinged base mount that currently adjusts to the height it s placed in relation to the field of play. Instead, analysts think Kinect will have a fixed field of view, but that it will be much wider going from the current 57.5? by 43.5? to a 70? by 60? area in which it can see you and you can play. This also ties into the rumor that a wider field of view will give the Kinect the ability to recognize six people instead of the current four player max.

The hardware in the Kinect motion sensor is also due for some serious upgrades. First, many predict a switch to USB 3.0 as its connector to the Xbox. That would give the Kinect a much wider pipe to pump data back to the console meaning decreased latency, smoother and more sophisticated game play, increased recognition of finger movement, and possibly detailed facial recognition including interpretation of your moods. Okay, maybe the mood recognition part of that prediction belongs in the Unlikely Features category, but it s possible.

Microsoft filed a patent for an immersive game play option where parts of the game would be projected all across the room where you re playing. No question that this would be cool, but it s pretty far fetched for the next release. More likely to come soon but not soon enough augmented reality glasses; you d see elements of the game in your glasses and use the Kinect s motion sensor to control gaming with gesture.

There are also persistent rumors that the new console won t allow you to play used games. Games won t play unless you can match a new game CD to a one-use-only game code. That would put an end to the highly lucrative Xbox game resale market and even limit sharing amongst friends. That would be a really bold move from Microsoft, and I can t quite believe they d risk angering that many fans, but business is business, so we ll just have to wait and see.

While the E3 gaming conference in June is a natural time to make a big debut, the recent Sony Playstation 4 announcement puts pressure on Microsoft to unveil soon. Developer chatter has us expecting a late April announcement. One thing s certain, the new Xbox will be available for purchase in time for the holidays.

Vita Sales in Japan Have Quadrupled

It really does seem like cutting the price of the hardware is a cure-all. The most recent example? PlayStation Vita. According to a report from Gematsu, Vita sales in Japan are up roughly four times the usual amount following Vita s much-advertised price cut, bring it down below \(\frac{1}{2}\)20,000.

Specifically, word comes from Sony Computer Entertainment Japan President Hiroshi Kawano, who, during a presentation of One Piece: Pirate Warriors 2, noted that, according to Gematsu, PlayStation Vita sales in [Japan] have increased about four times the amount of units the platform was moving two weeks prior

As noted in that story, Vita sold 11,000 units two weeks before the price cut; presumably, this means Vita sold around 44,000 units following the price cut, a substantial amount for a handheld that s been struggling to gain a foothold. Whether or not the price cut can create sustained growth in Vita sales remains to be seen, of course.

Still, with this new evidence that price cuts do indeed push units, has Sony made an error in not cutting Vita s price around the world?

EA Botches SimCity Launch, Amazon Stops Sales

IconSo, SimCity has been released - the fifth instalment in this venerable series of fantastic games. However, just as everyone suspected, the game has been completely ruined by the always-online DRM. So much so, in fact, that Amazon has ceased selling the game.

SimCity requires no introduction - from the first game onwards, it has captured the minds and hearts of gamers the world over. SimCity 2000 is my personal favourite, but I have played all versions to death. I was eagerly awaiting SimCity (no version number), but sadly, the game has been ruined even before it's been properly released.

The game requires an always-on internet connection to connect with EA's servers, partly because of online components, but mostly because of DRM. During a Reddit AmA with Maxis, the game's developers, the problems were already predicted, and they panned out: EA's servers couldn't handle the load, and the game became unplayable for large groups of people who just paid 60 for the privilege.

They were greeted by waiting screens, unable to play the game.

EA had to act, and they did. They have released a patch which... Disables several features of the game. Ironically, it mostly disables features that supposedly required the always-on connection in the first pace, such as leaderboards and achievements. A more dramatic step is the removal of the 'cheetah' speed. This is the highest simulation speed in the game, and at least in the way I play the game I require it - I switch between pause (build mode) and cheetah (develop mode).

As a consequence of all the troubles with players being unable to, well, play, Amazon has decided to remove the digital version of the game from its virtual shelves, while the physical copy now carries a warning about the game.

I don't think EA could have handled this any worse. None of the gameplay features require always-on connectivity; you can play the game entirely on your own. It's this kind of - pardon me - shit that makes people hate you, EA. You just ruined SimCity.

Sony Sells Off \$437 Million in DeNA Stock

Capping off a tumultuous financial year, Sony has decided to sell off its shares in DeNA, the company that owns popular games portal and social network Mobage. Sony expects to gain \$437 million (or 40.9 billion yen) from the sale. The shares were purchased by Japanese company Nomura Securities.

This could mark a decision by Sony to move away from mobile gaming, instead choosing to focus on the Playstation brand. Freeing up some money with this sort of sale would be a good way to go about that.

Sony revealed the PlayStation 4 last month. DeNA, meanwhile, has produced popular social games in Japan based on brands such as Final Fantasy and Infinity Blade.

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A-ONE's Headline News
The Latest in Computer Technology News
Compiled by: Dana P. Jacobson

The European Commission has imposed a 561 million fine on Microsoft for failing to comply with its commitments to offer users a browser choice screen enabling them to easily choose their preferred web browser. In 2009, the Commission had made these commitments legally binding on Microsoft until 2014 (see IP/09/1941). In today's decision, the Commission finds that Microsoft failed to roll out the browser choice screen with its Windows 7 Service Pack 1 from May 2011 until July 2012. 15 million Windows users in the EU therefore did not see the choice screen during this period. Microsoft has acknowledged that the choice screen was not displayed during that time.

Commission Vice President in charge of competition policy Joaquín Almunia said: "In 2009, we closed our investigation about a suspected abuse of dominant position by Microsoft due to the tying of Internet Explorer to Windows by accepting commitments offered by the company. Legally binding commitments reached in antitrust decisions play a very important role in our enforcement policy because they allow for rapid solutions to competition problems. Of course, such decisions require strict compliance. A failure to comply is a very serious infringement that must be sanctioned accordingly."

In December 2009, the Commission had made legally binding on Microsoft commitments offered by the US software company to address competition concerns related to the tying of Microsoft's web browser, Internet Explorer, to its dominant client PC operating system Windows (see IP/09/1941, MEMO/09/558 and MEMO/09/559). Specifically, Microsoft committed to make available for five years (i.e. until 2014) in the European Economic Area a "choice screen" enabling users of the Windows operating system to choose in an informed and unbiased manner which web browser(s) they wanted to install in addition to, or instead of, Microsoft's web browser.

The choice screen was provided as of March 2010 to European Windows users who have Internet Explorer set as their default web browser. While it was implemented, the choice screen was very successful with users: for example, until November 2010, 84 million browsers were downloaded through it. When the failure to comply was detected and documented in July 2012, the Commission opened an investigation (see IP/12/800) and before taking a decision notified to Microsoft its formal objections in October 2012 (see IP/12/1149).

This is the first time that the Commission has had to fine a company for non-compliance with a commitments decision. In the calculation of the fine the Commission took into account the gravity and duration of the infringement, the need to ensure a deterrent effect of the fine and, as a mitigating circumstance, the fact that Microsoft has cooperated with the Commission and provided information which helped the Commission to investigate the matter efficiently.

When the Commission finds an infringement of EU antitrust rules such as an abuse of a dominant market position (Article 102 of the Treaty on the Functioning of the European Union), it may take a decision under Article 7 of the EU's Antitrust Regulation (1/2003) prohibiting such behaviour and imposing sanctions. The Commission may impose a fine up to 10% of the undertaking's total turnover in the preceding business year.

However, under Article 9 of the Regulation, the Commission may also conclude an antitrust investigation by making legally binding the commitments offered by the companies concerned. Such an Article 9 decision

does not conclude that there is an infringement of EU antitrust rules and does not impose a sanction. However, it legally binds the companies concerned to comply with the commitments. Since the entry into force of the Regulation in 2003, the Commission has taken 29 decisions under Article 9, including the decision on Internet Explorer (IP/09/1941).

If a company breaks such commitments, Article 23 (2) of the Antitrust Regulation empowers the Commission to impose fines of up to 10% of its total turnover in the preceding business year.

The Commission's investigation into the tying of Windows and Internet Explorer was distinct from the antitrust case involving Microsoft which concluded in 2004 with a Decision finding that Microsoft had abused its dominant position and imposing fines. This case focused on interoperability between Windows and work group servers and on the tying of Windows Media Player to Windows (IP/04/382).

Can Microsoft s Executives Be That Stupid?

So here we go again. An AP story out of Amsterdam this week reports that the European Union Commission has fined Microsoft the princely sum of \$733 million. Why? Well, as many of you recall, Microsoft was supposed to offer Windows users in Europe a choice of browsers when they first setup the OS, or their new PCs.

That agreement came out of a 2009 settlement, in which Microsoft paid a fine of 860 million euros (over \$1.12 billion based on current exchange rates) to give customers a way to choose a browser other than Internet Explorer. You'd think that would have been the end of it, as this agreement seems one that's fairly easy to fulfill, right? But not so.

According to the report on the latest findings, Microsoft failed to offer the browser choice on some 15 million installations of Windows 7 in Europe from May 2011 until July 2012. Microsoft admitted the transgression, saying it was a mistake, and evidently cooperated in the investigation.

The mind boggles.

It's really hard to believe that Microsoft wasn't aware of the violation or the cause of that violation from Day One. You'd almost think they never tested their OS installations after shipment, and wouldn't Microsoft's rivals in the browser wars, such as Opera, complain? But I'm more concerned about the regulators at the European Union who allowed this clear violation to continue for so long before clamping down. Sure, exacting hundreds of millions of euros from Microsoft had to be an attractive prospect. I'm not saying it was deliberate. But the failure to notice what happened simply doesn't make sense.

Or maybe so few people care about Microsoft these days that they simply didn't bother to complain. After all, it would take but one phone call and a few photos or screen shots to confirm the lack of browser choice on a new Windows 7 installation in Europe. How was this allowed to go on for so long?

In all, Microsoft has paid some 2.2 billion euros (\$2.86 billion) in fines as the result of their alleged abuse of market power. These days, of course, Windows users routinely install other browsers, and not just in

Europe, and that decision is made without a ballot box. Firefox and Chrome have both taken a hefty portion of the market, but have yet to unseat MSIE.

According to one survey from Net Market Share - and the numbers vary considerably depending on the source - all versions of Internet Explorer held 55.82% of the market as of the first part of 2013. Firefox remained in the number two spot, with 20.12%. Google Chrome had 16.27%, and Apple Safari held position number four with 5.42%, but Apple's browser is evidently no longer being developed for Windows users.

Such surveys don't reveal mobile browser share, where Apple and other WebKit browsers, including the ones supplied with Android (Internet or Chrome) have the sort of dominance that Microsoft enjoyed on PCs for many years.

But Microsoft isn't just squandering money on fines, and this latest fine could have been easily avoided. They are also throwing bad money into those terrible ads for Windows 8 and the Surface tablet, not to mention Internet Explorer. Evidently Microsoft believes that sound and fury, in a sense yelling at potential customers for attention among the clatter of TV spots, has to have a positive outcome. The facts, however, are otherwise. Windows 8 has not been that well accepted, and Windows Phone 8 and the Surface tablets have essentially gone nowhere.

Faced with this situation, you'd think Microsoft's CEO, Steve Ballmer, and his executive team, would be working overtime to deal with the company's serious problems, and not pretending everything is just peachy. Were there any consequences when the company failed to properly configure Windows 7 installers for the European market? Was one person, or a whole team, responsible for failing to present the browser selection interface?

When it comes to Windows Phone, rather than doubling down and updating the platform as if nothing was wrong, why isn't Microsoft going back to the drawing boards and figuring out how to deliver a compelling mobile OS that would help drive cutting-edge hardware, rather than also-rans? With PC sales declining, why isn't Microsoft rushing to build a Windows 8 Service Pack to address the worst ills? What about just restoring the Start Menu for starters, a feature to which users have been accustomed for years? The apparent popularity of third-party solutions has to convey a message, one hopes.

Doing fast fixes shouldn't be difficult for a company with Microsoft's resources. Take a look at an auto industry example. Despite great sales for the 2012 Honda Civic, the new model received tepid reviews, and lost the cherished "recommended" rating from Consumer Reports. Honda did a fast refresh, and the 2013 Civic is far better in almost every way, from looks, to comfort, interior fit and finish and, of course, ride and handling. This relatively quick fixer-upper must have costa Honda hundreds and hundreds of millions of dollars, and it had a positive result.

Microsoft should follow Honda's example, and get on with the job of revamping Windows Phone and Windows 8 into platforms customers might really like.

Apple filed a patent application Thursday to create a marketplace for used digital goods. The description is similar to the idea behind the patent that Amazon won approval for in February. Unlike Amazon s patent, however, Apple s possible system outlines the ways in which publishers could profit from the resale of digital goods. (Note: Apple applies for patents on lots of things, and applying for one doesn t necessarily mean the company will do anything with it.)

Apple s patent application describes a system that would allow users to transfer access to digital content such as an ebook, music, movie, software application to others:

The transferor is prevented from accessing the digital content item after the transfer occurs. The entity that sold the digital content item to the transferor enforces the access rights to the digital content item by storing data that establishes which user currently has access to the digital content item. After the change in access rights, only the transferee is allowed access to the digital content item. As part of the change in access rights, the transferee may pay to obtain access to the digital content item. A portion of the proceeds of the resale may be paid to the creator or publisher of the digital content item and/or the entity that originally sold the digital content item to the original owner.

The application also describes many possible aspects of a marketplace for used digital goods including how publishers might get paid:

How users might trace a file s previous owner history: A user that purchases a used digital biology book may be interested in who previously had access to the digital school book because that previous owner may have helpful information about a class taught by a professor that required that book. As another example, a current owner of a digital movie might be able to see that one or more of her friends also owned that digital movie and, as a result, starts a conversation with them regarding the contents of the digital movie.

How buyers and sellers could find each other: The patent describes possibilities like physically meeting on an airplane, using online resources, posting on a social network or physically bumping devices against each other: For example, while device 230 is playing a song and is in a bump mode and while device 240 is in a bump mode, device 230 touches device 240. This touch or bump causes a copy of the song to be accessible to one of Sally s devices (e.g., device 240) either immediately or later.

Payments for publishers: The patent lays out possibilities for how a piece of content s original publisher could profit from a resale (something that rarely if ever happens with physical goods). In one possible outcome, the percentages that each party or entity receives from a resale of a digital content item changes (1) based on the passage of time or (2) based on how many times the digital content item has been resold among end-users. For example, publisher 110 receives (a) 50% on each resale of digital content item 202 that occurs within a year of the initial sale from intermediary 120 to Jeff and (b)20% on each resale that occurs more than a year after the initial sale. As another example, publisher 110 receives 50% on the first resale (i.e., from Jeff to Sally) and 40% on second resale (i.e., from Sally to another user, not shown).

As we noted last month, users rights to resell digital content is a contentious issue under current U.S. copyright law. This year, a court will rule on whether startup ReDigi, which allows users to resell digital music, is legal. Last year, the European Court of Justice ruled that

users have the right to resell downloaded software.

Google To Pay \$7 Million To Settle Wi-Fi Case

Google will pay a \$7 million penalty to settle a multistate investigation into the Internet search leader's collection of emails, passwords and other sensitive information sent over wireless networks in neighborhoods throughout the country several years ago.

A person familiar with the matter says the resolution will close a joint investigation by more than 30 states. The person asked not to be identified because the settlement isn't expected to be announced until early next week.

The case dates back to 2010 when Google Inc. revealed that company cars taking street-level photos for its online mapping service also had been vacuuming up personal data transmitted over wireless networks that weren't protected by passwords.

Google has maintained it didn't break any U.S. laws and has apologized for a breach of online etiquette.

Czech News Media Face Cyberattacks

Leading media websites in the Czech Republic say they have come under repeated and powerful cyberattacks.

The online editions of Mlada Fronta Dnes, a major newspaper, and of the respected business daily Hospodarske Noviny were among the affected.

The attacks occurred Monday morning and again in the afternoon.

Mlada Fronta Dnes' iDNES.cz says it considers the denial of service attacks the biggest it has ever faced. It says they likely originated from infected computers abroad.

Lucie Tvaruzkova, editor-in-chief of IHNED.cz, the site that belongs to Hospodarske Noviny, says "it was a coordinated attack on big media websites in the Czech Republic."

Tvaruzkova says it is not clear who is behind the attacks.

Hackers Fail To Crack Chrome OS

Google offered hackers a chance at a big pay day if they could crack its Chrome OS platform. The company held its annual Pwnium competition at the ConSecWest security conference in Vancouver this week where it put \$3.14159 million up for grabs. While a number of hackers attempted to get a piece of the Pi, a Google spokesperson confirmed in a statement to TechCrunch that none of them succeeded in fully cracking the operating system. The company did reveal, however, that it is evaluating some work

that may qualify as partial credit. Google is making a big push to boost consumer interest in Chrome OS. The company recently released the high-end Chromebook Pixel to compete directly with the Retina display Macbook Pro.

Samsung Cancels US Windows RT Tablet Plans

There wasn't really a very clear positioning of what Windows RT meant in the marketplace, what it stood for relative to Windows 8, that was being done in an effective manner to the consumer. When we did some tests and studies on how we could go to market with a Windows RT device, we determined there was a lot of heavy lifting we still needed to do to educate the customer on what Windows RT was. And that heavy lifting was going to require pretty heavy investment. When we added those two things up, the investments necessary to educate the consumer on the difference between RT and Windows 8, plus the modest feedback that we got regarding how successful could this be at retail from our retail partners, we decided maybe we ought to wait.

Another issue, according to Samsung, is price. The Korean giant claims that in order to keep the price of Windows RT devices down, it has to make too many compromises. The issue here, of course, is that ARM-based Windows 8 tablets should be cheaper than x86-based ones, since they are simply less functional.

This doesn't surprise me. I'm going to buy a Surface RT (so I can do a proper review of Windows 8), and as part of my duty as a consumer I wanted to play with a Windows RT tablet to see what performance is like, and whether or not I can justify spending 400 more for the Surface Pro (unlikely). Expecting to see loads of Windows 8 tablets, I went to the country's largest chain of electronics retailers.

To my utter surprise, they didn't have a single Windows 8 tablet on display; no ARM, no x86. In fact, they didn't sell any Windows 8/Windows RT tablets at all! The aisles were lined with Android tablets of all shapes, sizes, and prices. On top of that, the iPads were stacked roof-high; all iPads were fully stocked, and there was even a bargain bin specifically for brand new iPad 3s.

But not a single tablet with Windows 8 or Windows RT. I also noticed - for the first time - that they had reduced the shelf space available to laptops, and that, also for the first time, Apple laptops were intermingled with Windows laptops.

It's all anectodal, of course, but if I were Microsoft, I'd be worried.

Windows 8 Laptops Are Getting Cheaper Will Consumers Bite?

Earlier this week, The Wall Street Journal reported that Microsoft was offering its manufacturing partners a discount on Windows 8 licensing fees. The reduced cost will likely help manufacturers offer lower priced Windows 8 laptops. According to Digitimes, prices of Windows 8-powered touchscreen notebooks are expected to drop at least 10%, while some entry-level models could drop as much as 20%. Touchscreen laptops

currently account for about 10% of all notebook sales, however the reduced prices are expected to increase sales to account for more than 20% in the second quarter. The new sweet spot for touchscreen notebooks is said to be around \$500, although it will still likely take some time before consumers fully embrace the new operating system.

Sandberg's Hot-button Book Rings True for Silicon Valley Women

Facebook executive Sheryl Sandberg is taking a drubbing for prescribing from a privileged perch the keys to female success in her upcoming book "Lean In," but she's struck a chord among many in her backyard.

In her own technology sector, women remain woefully underrepresented in leadership roles, even more so than in fields generally considered heavily male-dominated like financial services. Sandberg's willingness to tackle the issue of women and leadership is drawing plaudits from many in Silicon Valley.

"She is bringing a topic forward that a lot of people want to talk about," says Blair Christie, chief marketing officer at networking company Cisco Systems. "It doesn't matter what side of the debate you're on."

Sandy Kurtzig - one of the first women founders to take a company through an initial public offering when her software company, Ask, listed on the New York Stoc Exchange in 1981 - brushes aside the criticism that Sandberg is speaking from heights unattainable for most women.

"To put herself out there is how she's chosen to contribute," says Kurtzig. "You need more role models."

Of all the top executives working for a Standard & Poor's 500, midcap or smallcap indices technology company for at least a year during the decade ended in 2009, just 5.5 percent were women, says George-Levi Gayle, an associate professor of economics at Washington University in St. Louis specializing in gender and pay issues in the workplace. The data is the most recent available; other studies on women in the workplace tend to include technology in the "services" category, which includes other unrelated fields.

Technology's 5.5 percent compares to 5.9 percent for financial services, 6.8 percent for industrials, and 8.1 percent for consumer goods. Sectors that did worse than technology when it comes to women leaders included health care, materials companies, and energy companies, according to Gayle's data.

He blames the underrepresentation on the low number of women majoring in engineering and computer science. Just 13.3 percent of all bachelor's degrees in computer science, computer engineering, or information go to women, according to the Computing Research Association, a trade group. That represents a decline from 17.5 percent 10 years ago, according to the most comparable data from the CRA.

Sandberg's book is the follow-up to talks she gave starting in 2010 on why the world has too few women leaders. After working at the U.S. Treasury Department, Sandberg scaled the heights of Silicon Valley, moving from Google to chief operating officer at Facebook while raising two children. The 43-year-old is adamant about making it home every night for dinner.

While the book does not come out until Monday, advance press for "Lean In: Women, Work and the Will to Lead" has sparked a fierce debate between supporters and detractors on the Internet. A bestselling book could ensure the debate has practical results in workplaces across the United States.

"Lean In" offers tips for women in the workforce in general, such as how to command more respect through simple acts such as sitting tall at a conference table and speaking assertively at meetings.

Points like that might sound lightweight, but can have a big effect, says Theresia Gouw Ranzetta of venture firm Accel Partners, the firm known for backing Facebook in its early days.

"It impacts the way people perceive you," she says. "But you have to have the substance to back it up." She recalls receiving similar coaching early in her career when she worked as a management consultant at Bain & Co.

Kurtzig, now founder and chief executive of software start-up Kenandy, says too often she has seen women walk into a conference room and automatically head for chairs around the edges of the room rather than the main table. The message: "You're a support person," she says. "Not a main character."

She is not as positive about Sandberg's pitch for women to join "Lean In Circles," or groups where they can support each other and learn how to achieve more success in their careers. "In business, you need to assimilate into the world, and the world is men and women," she says.

Many technology veterans believe employers need to do more to help women gain entry to executive suites.

"How women show up and really drive their success in the workplace is important," says Cisco's Christie. "But there's a huge role for employers to move the topic of gender diversity where it needs to be."

She lays part of the blame on the paucity of women executives in technology on the relative immaturity of the sector. More established companies have strong development programs that have tried to foster the advancement of women, she says, while technology companies have generally focused on keeping up with their rapid growth.

Ellen Pao, a former partner at venture firm Kleiner Perkins Caufield & Byers who is suing the firm for gender discrimination and retaliation in a case closely watched in Silicon Valley, believes individuals and companies should pay more attention to attitudes. "A lot of the stuff that happens seems to be very subconscious or unintentional, but it happens," she says.

Some women in technology say they are encouraged by changes they see at the upper echelons. "What I'm seeing on the ground is really a sense of momentum, and increasing momentum," says Accel's Ranzetta.

She points to companies like Hewlett Packard IBM, Xerox, and Yahoo, where Meg Whitman, Ginni Rometty, Ursula Burns and Marissa Meyer, respectively, are chief executives, as well as the growing numbers of female founders and executives she sees at start-up companies.

"Merissa Meyer and Sheryl both rose very quickly by first joining small

entrepreneurial companies," she says, referring to the boost both of them got by working at Google while it was still a private company.

But she sees an even speedier route to the top in technology. "If you want to become CEO of a Fortune 500 company, I would say go start a company," Ranzetta says. "It's the fastest way to the C-suite."

3D-Printed Skull Implant Ready for Operation

3D printing technology has helped replace 75 percent of a patient's skull with the approval of U.S. regulators.

The 3D-printed implant can replace the bone in people's skulls damaged by disease or trauma, according to Oxford Performance Materials. The company announced it had received approval from the U.S. Food and Drug Administration for its skull implant on Feb. 18 a decision that led to the first U.S. surgical operation on March 4.

"We see no part of the orthopedic industry being untouched by this," said Scott DeFelice, president of Oxford Performance Materials.

DeFelice's company is already selling 3D-printed implants overseas as a contract manufacturer. But the FDA decision has opened the door for U.S. operations using the implants.

3D printing's advantage comes from taking the digitally scanned model of a patient's skull and "printing" out a matching 3D object layer by layer. The precise manufacturing technique can even make tiny surface or edge details on the replacement part that encourage the growth of cells and allow bone to attach more easily.

About 300 to 500 U.S. patients could use skull bone replacements every month, according to DeFelice. The possible patients include people with cancerous bone in their skulls, as well as car accident victims and U.S. military members suffering from head trauma.

DeFelice envisions going beyond the OsteoFab Patient Specific Cranial Device to make 3D-printed bone replacements for all parts of the human body. His company has already begun preparing to submit other 3D-printed bone parts for FDA approval a huge market worth as much as \$50 million to \$100 million for each bone replacement type.

"If you can replace a bony void in someone's head next to the brain, you have a pretty good platform for filling bony voids elsewhere," DeFelice told TechNewsDaily.

Oxford Performance Materials adapted EOS P800 printing technology to use a special polyetherketoneketone (PEKK) material that has proved suitable for human implants. The company runs a biomedical-compliant manufacturing facility in South Windsor, Conn., that can print bone replacements fitted for specific patients in two weeks or less.

Such possibilities represent just one small part of 3D printing's potential to revolutionize U.S. manufacturing and innovation. Oxford Performance Materials is one of many companies and universities that helped found the U.S. National Additive Manufacturing Innovation Institute a \$30 million pilot institute funded by the U.S. government to help

transform 3D printing into a serious manufacturing tool.

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